

APPLICANT(S): BIEBER, Avigdor et al.
SERIAL NO.: 10/519,478
FILED: December 30, 2004
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REMARKS

Applicants respectfully request reconsideration of the above-identified application in view of the following remarks.

Status of Claims

Claims 7, 13-23, and 27 were previously canceled. Accordingly, Claims 1-6, 8-12, and 24-26 remain pending in the application.

CLAIM REJECTIONS

35 U.S.C. § 102 Rejections

In the Office Action, the Examiner has rejected Claims 1-6, 8-12 and 24-25 under 35 U.S.C. § 102(b), as being anticipated by Crawford et al. (US 4,387,156). It is respectfully submitted that the invention as recited in the amended claims is not anticipated by Crawford et al. and consequently the rejection should be withdrawn.

Applicants' invention as defined by the pending claims includes "so that less laser energy is needed for ablating the laser-absorbing layer than what would be needed for ablating a laser-absorbing layer not having the gradient of concentration ratios but having about the same thickness and constituents than that of the layer-absorbing layer".

It is respectfully submitted that the Crawford reference alone or in combination with any other reference does not teach or describe the invention of the pending claims. As the examiner noted at the top of page 3 of the Office Action, the claimed MMO layer is the laser-absorbing layer. However, Crawford does not even hint that his MMO is a laser-absorbing layer or one that ablates under laser radiation. On the contrary, Crawford's MMO layer is used as a binding layer between the substrate and the photoresist. The attention of the Examiner is respectfully directed to Col. 2, lines 51-63 which states,

"The present invention relates to a novel imageable construction comprising a substrate having on at least one surface thereof a layer comprising dispersion of (1) a metal

and (2) a metal oxide or sulfide, and a photoresist composition over said layer. These elements can display an excellent cohesion within the metal/(metal oxide or sulfide) layers and a good adhesion to the photoresist layer so that the various portions of these layers do not undesirably separate during development of the photoresist material. These photosensitive elements are further capable of being developed to their final image in a single step".

Further, Col. 3 lines 41-44, states,

"It has been found in the practice of the present invention that layers comprised of a dispersion of (1) metal and (2) metal oxides or sulfides provide improved bonding over pure metal and pure metal oxide layers".

Thus Crawford's teaching indicates that the reason for using the MMO layer is solving the bonding problem as explained in Col. 3 lines 25 to 34,

"Photoresist materials, both positive acting and negative acting, tend to bond poorly to the metal surface. This poor bonding is most particularly deleterious during development of an image on the article. The developer solutions, which are generally organic solvent containing aqueous alkaline solutions, tend to channel between the metal substrate and the portions of the photoresist layer which are not supposed to be removed by the developer. This causes indiscriminate removal of the resist and destruction of the image".

In fact, Applicants respectfully assert that a person skilled in the art would actually expect that more energy would be required to ablate a layer which has strong adhesion with the substrate than that required to ablate a layer having weaker adhesion to the substrate. Improving adhesion of the ablation layer to the substrate is contrary to improving ablation. This is because it is the de-bonding of the laser-absorbing layer from the substrate that accelerates the heating process which consequently reduces the

required laser energy needed for ablation. Thus, Crawford's teaching to improve adhesion would require more, not less power to ablate the ablation layer. For precisely this reason, in order to use less power, one would want less or poorer adhesion between the layers because poorer adhesion would de-bond (ablate) with less power.

The entire focus and purpose of the invention claimed herein is to have a printing member with a layer which ablates with less ablation energy than previously possible with a layer of the same approximate thickness. It is respectfully submitted that applying Crawford's teaching would not result in the claimed gradient which provides for such ablation efficiency.

In addition, the light used by Crawford is ultraviolet light as taught in Col. 8, lines 15-18, lines 37-40, and in the examples. It is well known in the art that UV light does not and can not ablate an MMO layer. Therefore, it is respectfully submitted that the Examiner's conclusion that the laser-absorbing layer is ablated is misplaced. Contrary to the pending claims in which the substrate is exposed by ablating the MMO layer, Crawford teaches to have a substrate exposed by a developing process in which the exposed photoresist and the MMO layer underneath the exposed photoresist are removed by aqueous solution and not by a laser as claimed.

Still further, Crawford fails to teach a top layer and a base layer having different affinities for ink. Despite the Examiner's citation that Crawford teaches that the top layer and the base layer have different affinities for ink ("The photoresist composition in example 3 is developed in an aqueous solution to remove the unexposed portion of the photoresist.") the Examiner draws the conclusion that "Therefore, the photoresist layer is ink-repelling." Applicants respectfully disagree with this conclusion. It is not clear how a conclusion about ink affinity can be drawn from a developing process. In fact, contrary to this conclusion of the Examiner, it is well known that both a film of polyethylene terephthalate as the substrate (base layer), as it is used in example 1 and 3, and the photoresist, used in example 3 as the top layer, are oleophilic. Consequently, Applicants assert that both of these layers have the same affinity to ink.

Thus, Applicants respectfully submit that the Crawford reference fails to teach at least the three following elements of the pending claims:

1. A laser-absorbing layer over said base layer, wherein said laser-absorbing layer has a gradient solid dispersion of metal and metal-oxide, forming varying concentration ratios of the metal and the metal-oxide throughout a thickness of said laser-absorbing layer, wherein the concentration ratio of the metal to metal oxide within the laser-absorbing layer is higher than the concentration ratio of the metal to metal oxide at both edges of the laser-absorbing layer so that less laser energy is needed for ablating the laser-absorbing layer than what would be needed for ablating a laser-absorbing layer not having the gradient of concentration ratios but having about the same thickness and constituents than that of the layer-absorbing layer.
2. A coating layer over said laser-absorbing layer, said coating layer and said base layer having different affinities for ink.
3. Said printing member is capable of being imaged such that selective areas of said coating layer and of said laser-absorbing layer are removed to expose said base layer.

35 U.S.C. § 103 Rejections

On page 5 of the Office Action, the Examiner has rejected Claims 1, 10, 11, and 12 under 35 U.S.C. § 103(a), as being unpatentable over Crawford in view of Goto et al. (US 6,777,156) and on page 7 of the Office Action, the Examiner has rejected Claims 1 and 26 under 35 U.S.C. § 103(a), as being unpatentable over Crawford in view of Goto et al. (US 6,777,156) and further in view of Nishida et al (US 5,417,164).

Applicants respectfully assert that the combination of Crawford, Goto, and Nishida does not does not render the claims obvious because none of these references teach or suggest that less laser energy is needed for ablating the laser-absorbing layer than what would be needed for ablating a laser-absorbing layer "not having the gradient of concentration ratios but having about the same thickness and constituents than that of the layer-absorbing layer". This recitation has been added to specifically define the laser absorbing characteristic of the layer.

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It is respectfully submitted that neither the Goto et al. nor the Nishida et al. reference can cure the deficiencies of the Crawford reference discussed above. Further, the Nishida et al. disclosure is not directed to a metal/metal oxide combination in a laser ablatable layer. Therefore, the disclosures of Crawford and Goto and Nishida alone or in combination do not render the claims obvious.

For the foregoing reasons, Applicants respectfully request that the rejections of the claims under 35 U.S.C. § 103(a) be withdrawn. Such action is respectfully solicited.

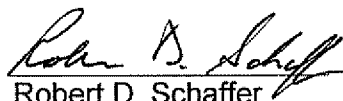
CONCLUSION

In view of the foregoing, Applicants submit that the pending claims clearly distinguish over the prior art of record and are in condition for allowance. Favorable consideration and passage to issue of the present application is therefore respectfully requested.

The Examiner is invited to telephone the undersigned to discuss any still outstanding matters with respect to the present application.

Please charge or credit any fees associated with this paper to deposit account No. 50-3355.

Respectfully submitted,



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